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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,629	09/22/2003	Marie Denison	MUH-12796	1191

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EXAMINER

KALAM, ABUL

ART UNIT PAPER NUMBER

2814

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/667,629	Applicant(s) DENISON ET AL.	
	Examiner Abul Kalam	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/24/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/22/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 6-8 are objected to because of a lack of antecedent basis. Claim 6 recites the limitation, "inner zones," in line 4. There is insufficient antecedent basis for this limitation in the claim. The claimed "inner zones" will interpreted by the office as the "inner cells" recited in claim 1. Claims 7 and 8 are dependent on claim 6, and thus contain the same error and are also objected to.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation, "operating point," claimed in line 6 of claim 1 and line 3 of claim 2, is ambiguous because the claimed "operating point" has multiple interpretations, and neither claims 1 nor 2 distinctly define the limitation of the claimed "operating point." Is the "operating point" referring to the voltage at which the cells turn on (threshold voltage) or the breakdown voltage at which avalanche operation is triggered or something else? Thus, the claim is indefinite, because the scope of the limitation, "operating point," is indeterminate. Claims 3-8 are dependent on both claims 1 and 2,

and thus contain the same errors and are also rejected. Claim 9 is dependent on claim 1, and thus is also rejected.

The limitation, "compensating for differences between the inner cells," in line 7 of claim 1, is indistinct and ambiguous, the claim does not specify any differences between the cells. The claim should distinctly point out the differences between the inner cells, or clearly explain what is meant by the limitation, "compensating for differences between the inner cells.

The limitation, "grid configuration," claimed in line 5 of claims 2 and 3, in line 2 of claim 5, and line 4 of claim 6, is ambiguous and unclear. Is the limitation "grid configuration," describing the distance between neighboring inner cells, or the placement of the inner cells relative to another other or relative to other structures or both? What does the applicant mean by grid configuration?

The limitation, "spacing distance," claimed in line 3 of claim 5, is unclear because the claim does not specify what the spacing distance is relative to. Is the spacing distance between the inner cells, the body zones, or some other structures in the inner cells? What does the limitation, "the grid configuration of the inner cells has a larger spacing distance," mean?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2814

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Contiero et al. (5,589,405).

With respect to claim 1, Contiero teaches a quasi-vertical semiconductor component (fig. 2), comprising:

a surface;

a semiconductor substrate ("P+ SUBSTRATE");

a well ("N-epi");

at least two inner cells disposed in the well and having a substantially similar operating point (fig. 1, all the gate electrodes are connected to the same voltage terminal and thus have a substantially similar operating point), thereby compensating for differences between the inner cells (as best interpreted by the office);

a buried layer ("N+ BURIED LAYER") disposed between the well and the semiconductor substrate; and

a sinker zone ("n+ sinker") connecting the buried layer to the surface of the semiconductor component.

With respect to claim 2, Contiero teaches the semiconductor component set forth in claim 1 above, wherein the inner cells have a given width and a given radius of curvature, and the substantially similar operating point (as best interpreted by the office) of the inner cells is set by varying the given radius of curvature of the inner cells (fig. 5, col. 2, Ins. 29-34).

With respect to claim 3, Contiero teaches the semiconductor component set forth in claims 1 and 2 above, wherein the inner cells have body zones ("P-body") with a given width and a given radius of curvature, and that at least one of the given radius of curvature of the body zones is varied (fig. 5, col. 2, lns. 29-34).

With respect to claim 4, Contiero teaches the semiconductor component set forth in claims 1, 2 and 3 above, wherein the body zones are one of wider and have a larger radius of curvature in a vicinity of the sinker zone than at a distance from the sinker zone (fig. 5, col. 2, lns. 29-34).

With respect to claim 5, Contiero teaches the semiconductor component set forth in claims 1, 2 and 3 above, wherein the grid configuration of the inner cells has a larger spacing distance (as best interpreted by the office) at a distance from the sinker zone than in a vicinity of the sinker zone (fig. 2 illustrates that the distance between the sinker zone and the inner cell closest to the sinker zone is greater than the distance between the two inner cells).

With respect to claim 6, Contiero teaches the semiconductor component set forth in claims 1 and 2 above, further comprising doped regions disposed in the well, a variation of the given radius of curvature the inner zones (as best interpreted by the office) is effected by the doped regions (fig. 5, col. 2, lns. 23-34).

With respect to claim 9, Contiero teaches the semiconductor component set forth in claim 1 above, wherein the well has an edge region (fig. 2, "field oxide") and the sinker zone is disposed at the edge region.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 8 rejected under 35 U.S.C. 103(a) as being obvious over Contiero ('405) as applied to claims ~~1, 2, and 6~~ above.

With respect to claim 7, Contiero teaches the semiconductor component as set forth in claims ~~1, 2, and 6~~ above, with the exception of disclosing:

wherein said doped regions are introduced by high-energy ion implantation.

However, the limitation, "wherein said doped regions are introduced by high-energy ion implantation," is a product by process limitation and thereby, given no patentable weight.

A product by process claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a

Art Unit: 2814

new method is not a patentable product, whether claimed in "product by process" claims or not.

With respect to claim 8, Contiero teaches the semiconductor component as set forth in claims 1, 2, 6 and 7 above, including wherein said doped regions lie between said well and said body zone of said inner cells (fig. 5).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abul Kalam whose telephone number is 571-272-8346. The examiner can normally be reached on Monday - Friday, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AK


ANH D. MAI
PRIMARY EXAMINER